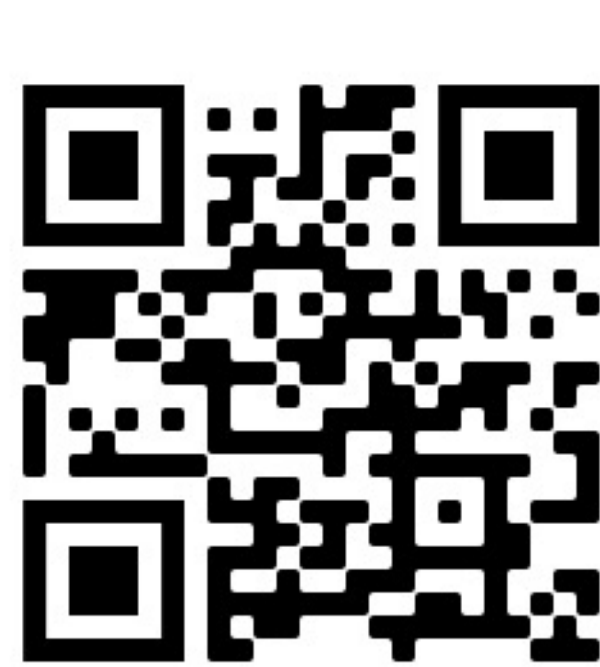




# Fatigue Assessment Methods on Offshore Oil Rigs: Feasibility and Compliance

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## BACKGROUND



Fatigue is a work hazard that negatively impacts performance and safety [1]

Fatigue is associated with **\$136 billion a year** in health-related lost productivity [2]

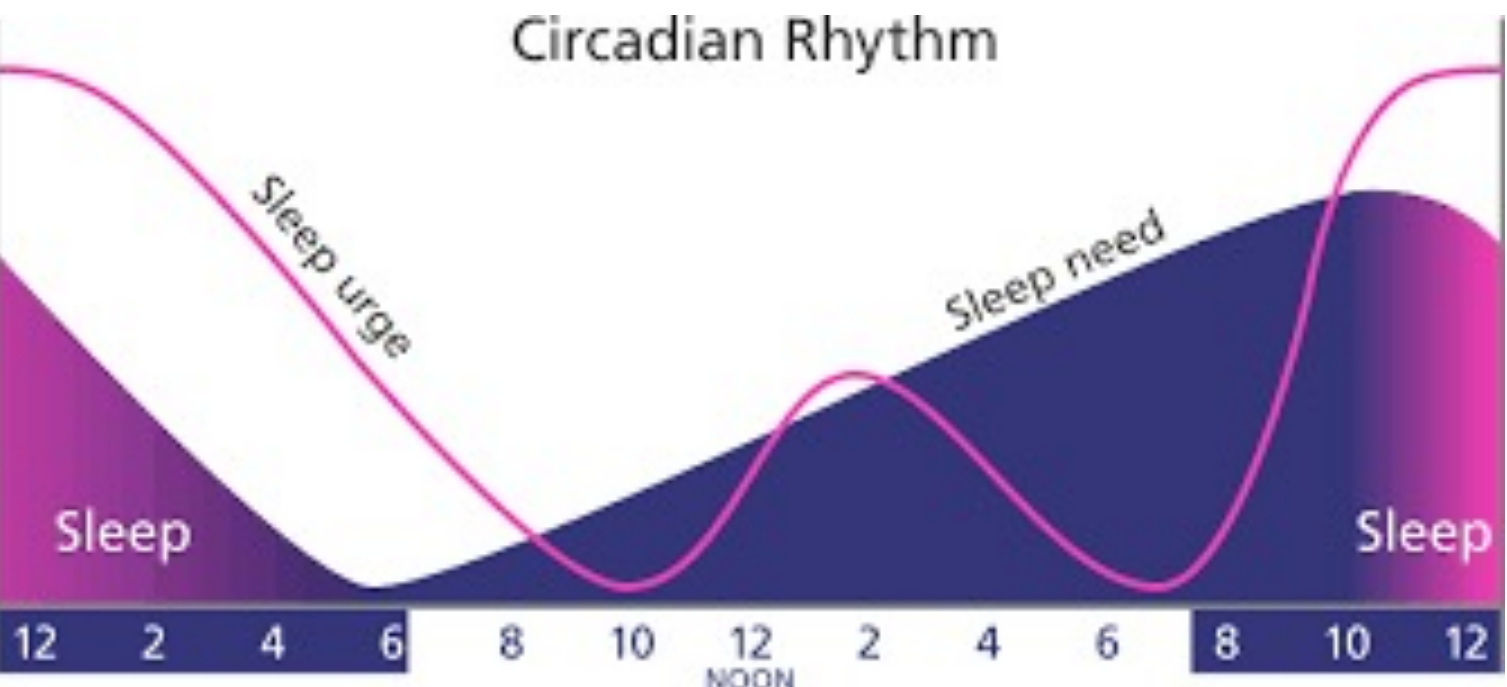
**Fatality rate** in the OGE industry is **7X higher** than the other U.S. workers [3]

Fatigue attributed to infamous disasters  
Exxon Valdez Oil Spill [4]  
Texas City Refinery Explosion [5]



## FATIGUE

- Caused by workload, long work hours, shiftwork, and circadian rhythm disruption [1]
- Reduction in physical and cognitive performance [6]
- Decreases both power and speed during physical task [7]
- Impairs executive control, information processing, concentration, and vigilance [8]

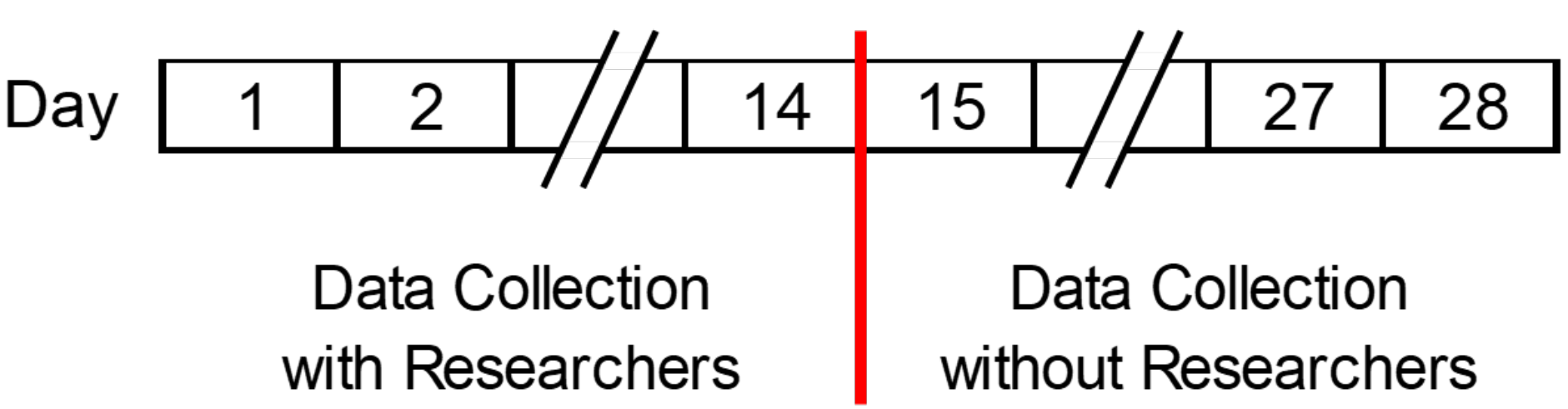
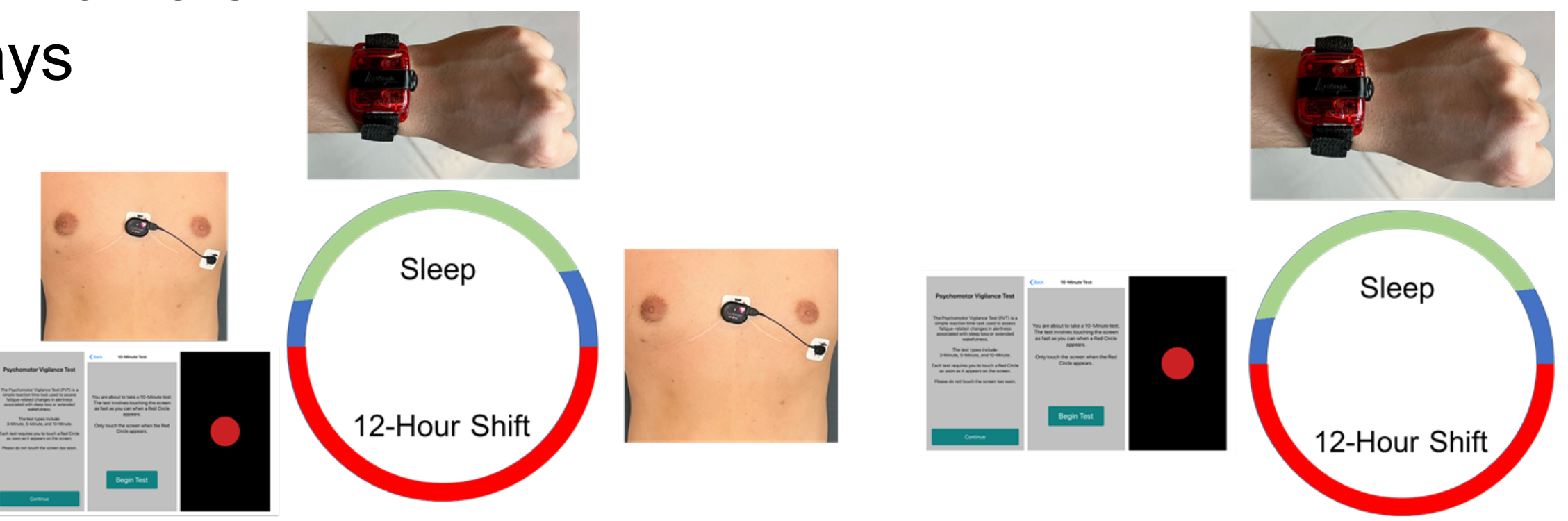


## OBJECTIVE

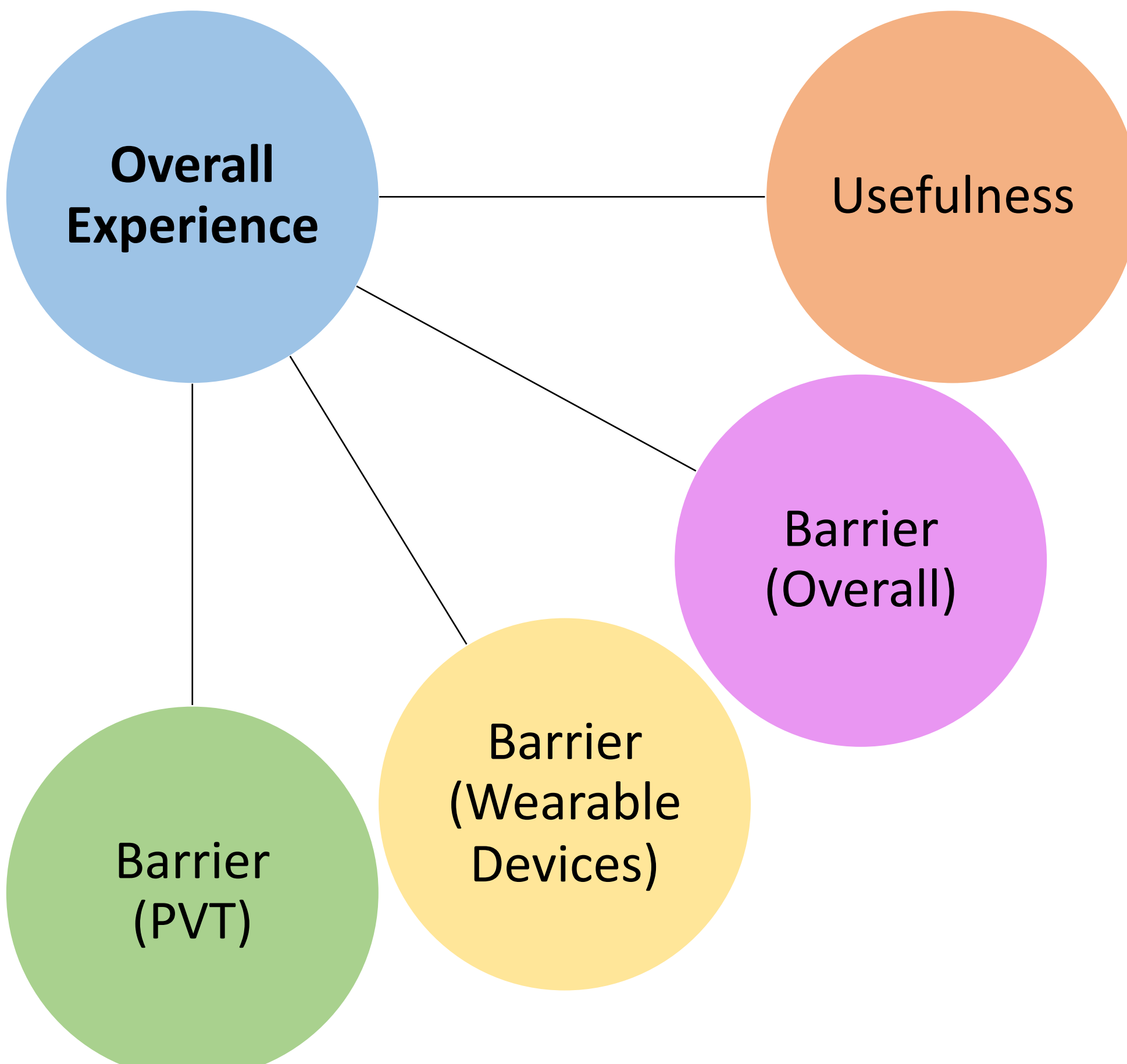
Assess the feasibility and compliance rate of various fatigue assessment methods that can be used in real-world offshore environments

## EXPERIMENTAL DESIGN

Location : 2 Offshore Drillships  
Participants : 70 workers  
Duration : 28 Days



## RESULTS – EXIT INTERVIEWS (31 / 70 Participants)



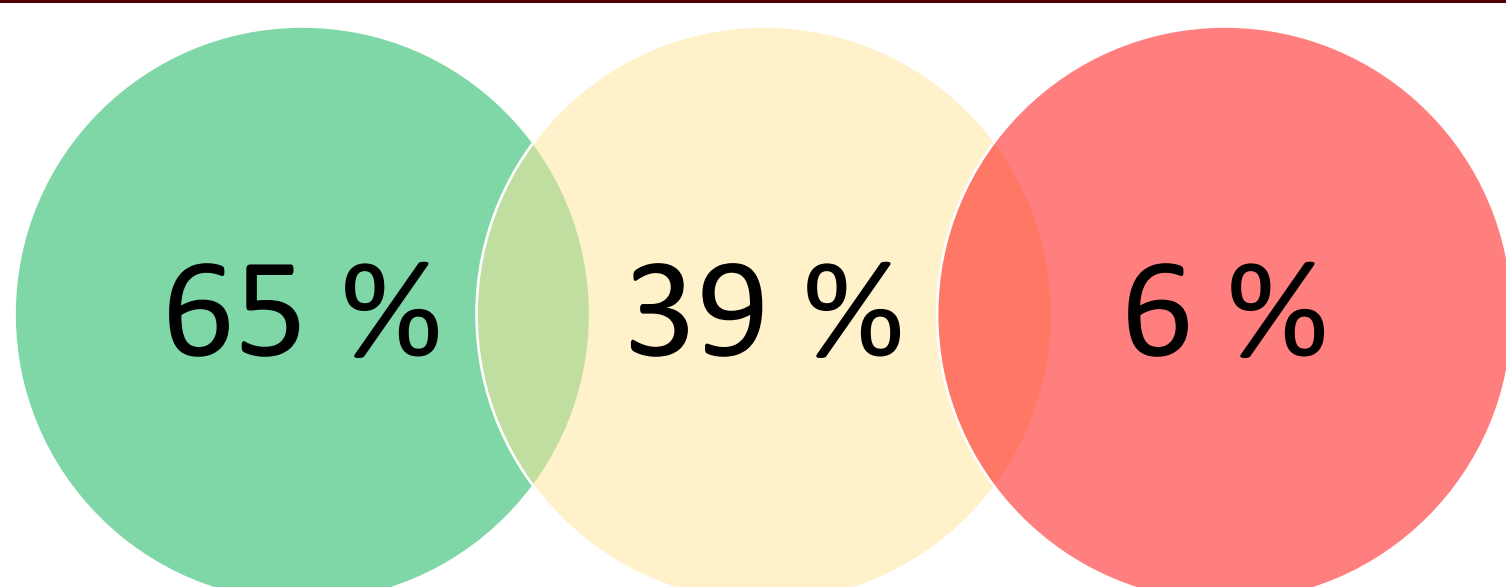
77% - No major complaints on their overall experience  
42% - Expressed positive perceptions toward the study

*I think it was a very good experience. It is really good for us as we work long hours and odd hours, as you know. It's very hard on some of the guys.*

13% - Expressed that they faced minor issues/complaints

*The red dot test is a little long to do every day.*

### USEFULNESS



65% - Expressed that methods were useful

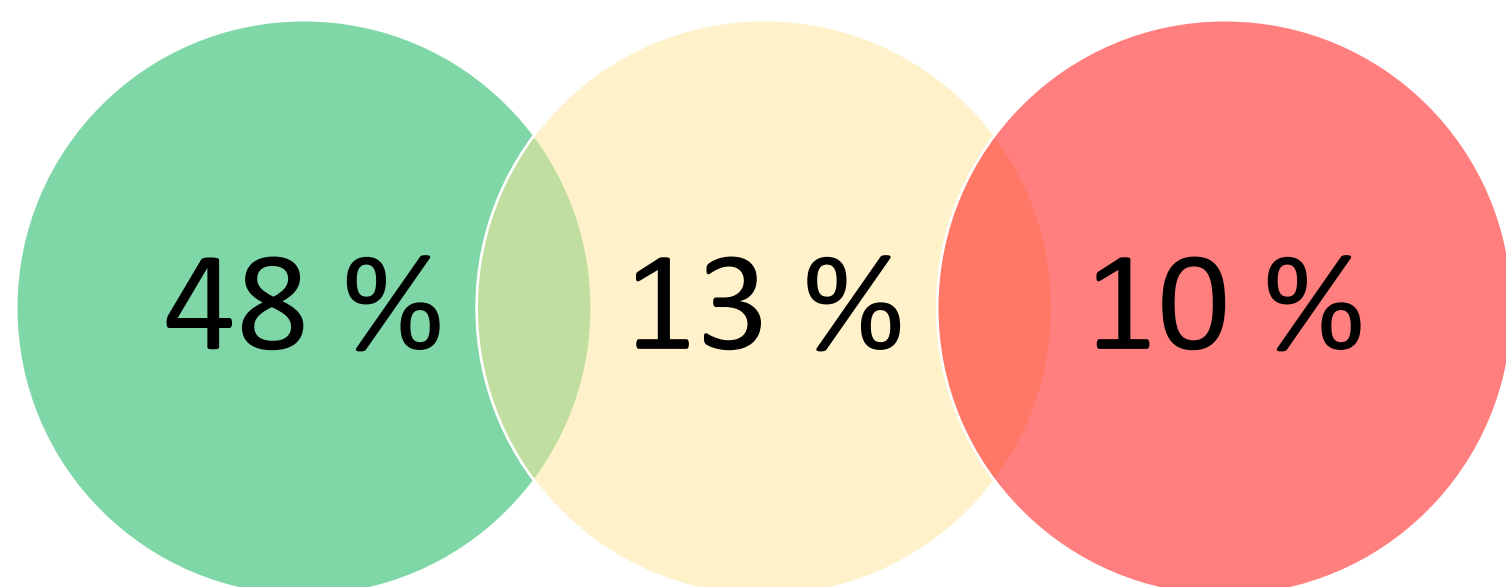
*Um, definitely thought it was useful. I mean, I enjoyed it. 100%*

39% - Didn't experience issues with the methods

*I don't know, I'm maybe indifferent on it. It didn't bother me. It takes a couple minutes out of my day so it was no big deal.*

6% - Expressed that methods were not useful

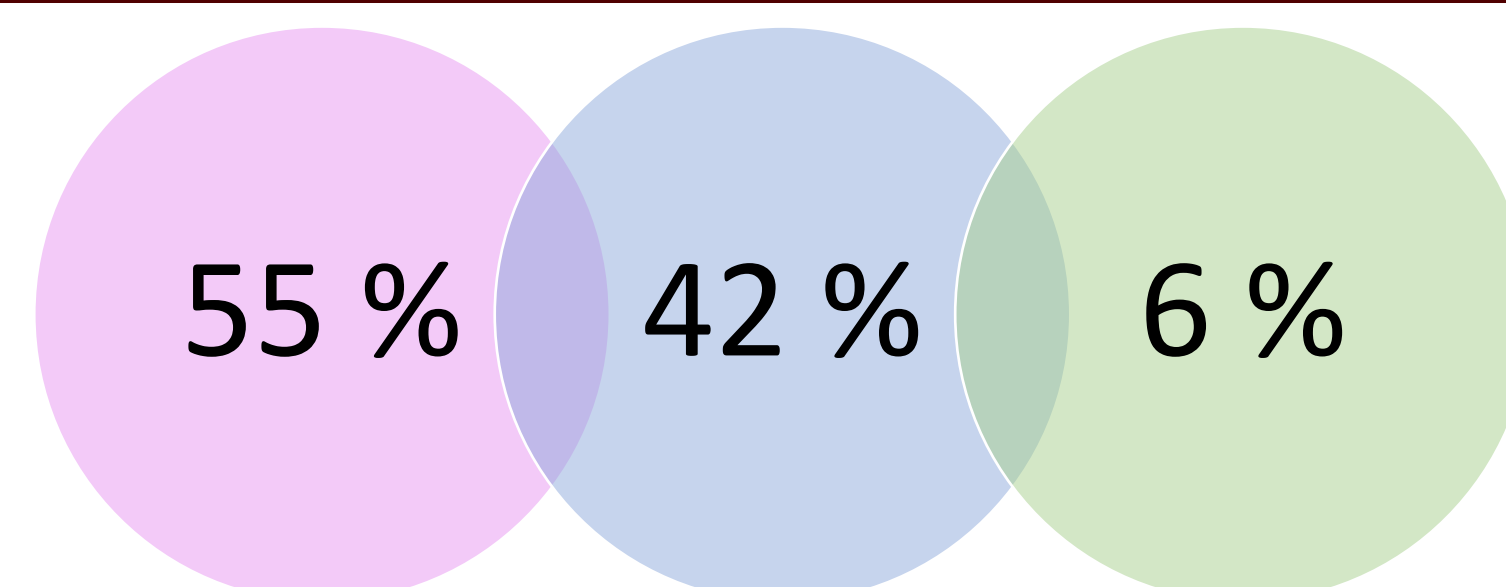
### BARRIERS (Wearable Devices)



48% - Expressed no barriers  
13% - Expressed that devices were not comfortable  
10% - Expressed that methods were time-consuming

*Now having to go down every day, twice a day to have the heart monitor out kind of was a pain. Because you know, we work 12 hours and taking that time, you don't have much decompression time.*

### BARRIERS (Overall)



55% - Psychomotor Vigilance Task (PVT)

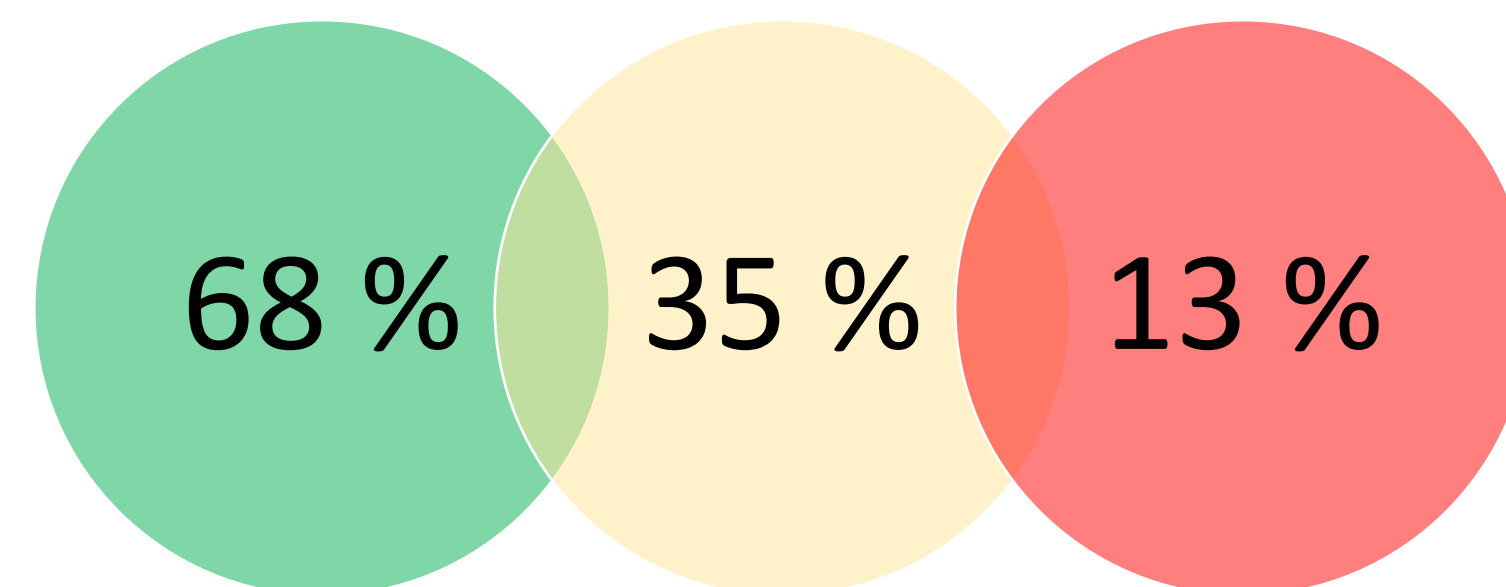
*The worst part would be the red dots.*

42% - Expressed difficulty to make it routine

*Doing it daily to be honestly difficult to do. Just people, if you had to force people to sit there and answer the questions for 10 minutes, and then do red dot test.*

6% - Expressed no barriers

### BARRIERS (PVT)



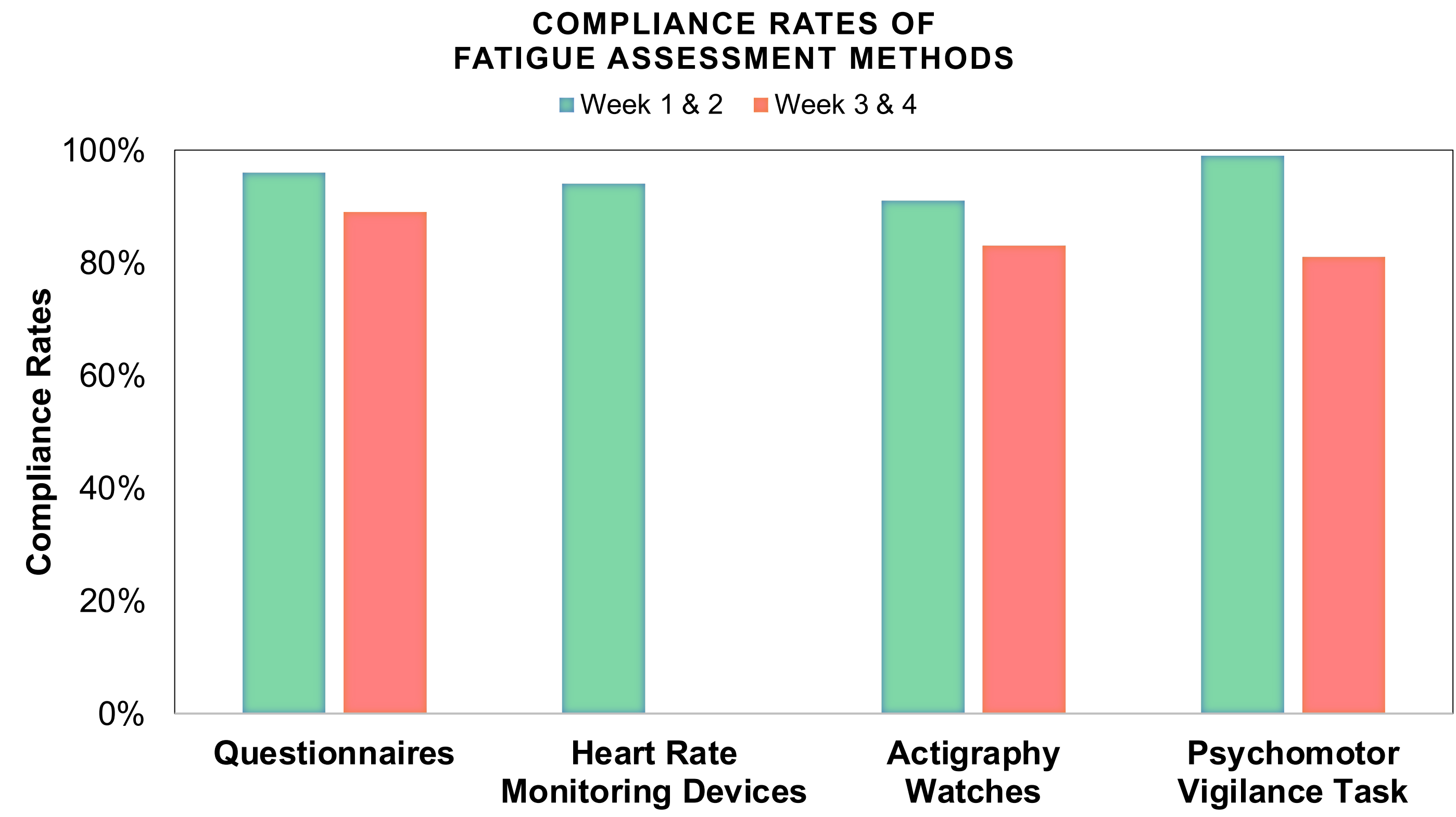
68% - Found it useful and good to track vigilance  
35% - Expressed that PVT was time-consuming

*Yeah [10 minutes] is a long time when all you're looking forward to is going to bed.*

13% - Expressed that it was boring

*I mean, at the end of it, it just got to be so repetitive and boring. It was harder to care about being vigilant.*

## RESULTS – COMPLIANCE RATES



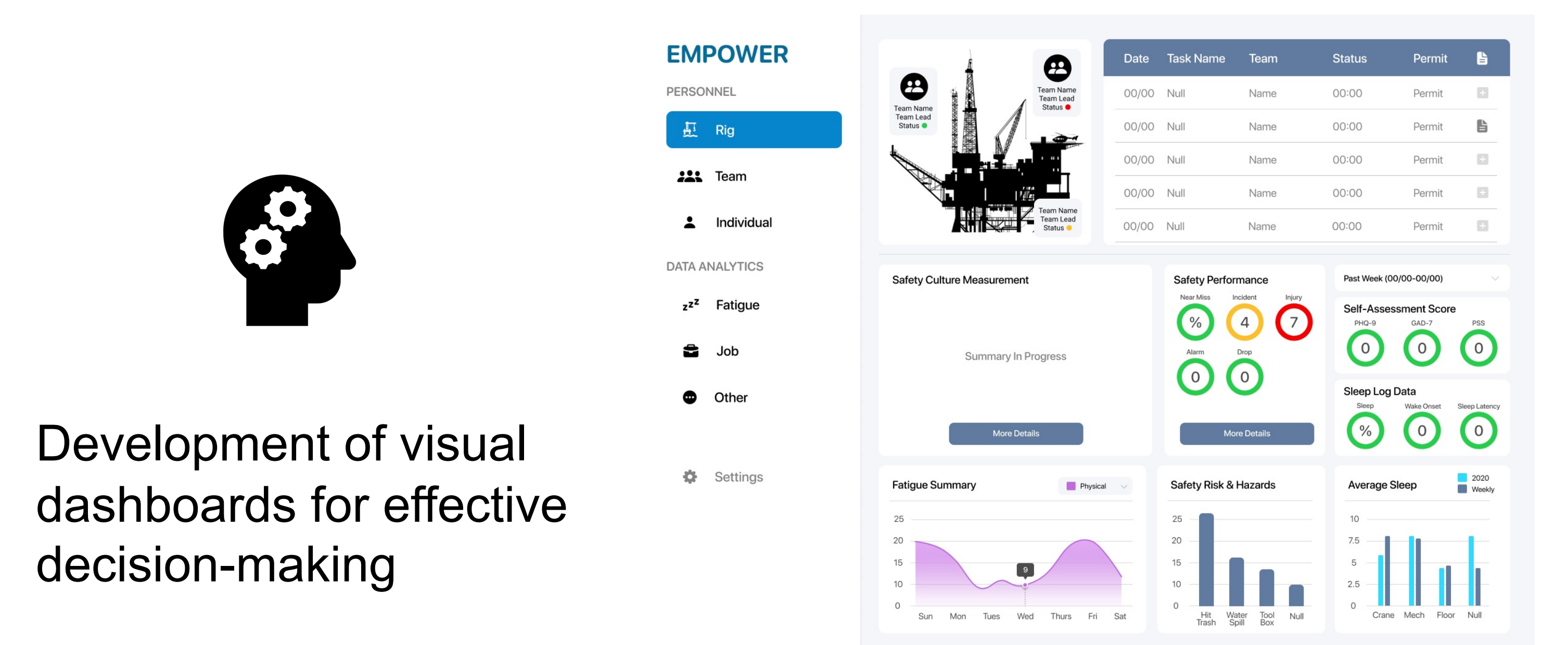
- ❖ Week 1 & 2 – Researchers reminded workers to come to data collection location before and after shifts
- ❖ Week 3 & 4 – HSE officers were in charge of data collection



Data collection location – Theater & Conference Room

## FUTURE WORK

- 👉 Test sensitivity of shorter-duration Psychomotor Vigilance Task ---- PVT being a barrier due to its duration (10 minutes)



Development of visual dashboards for effective decision-making

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